American
GAS JOURNAL
Formerly American Gas Light Journal
EST. 1859

VOL. 115, NO. 21
WHOLE NO. 3324

NEW YORK, SATURDAY, NOVEMBER 19, 1921

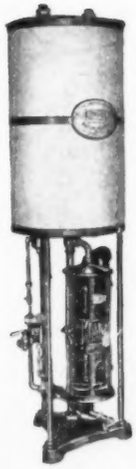
Subscription $3 per year
$4 Canada $5 Foreign

Library of Congress
NOV 21 1921
SMITHSONIAN DEPOSIT

PILOTS DO GO OUT

Guard Against Emergency

Sell Kompak gas water heaters. They automatically shut off all the gas to the heater should the pilot go out.



COMPANY MEMBER OF AMERICAN GAS ASSOCIATION

THE KOMPAK CO.
New Brunswick
New Jersey

C. B. Babcock Co.
SAN FRANCISCO, CAL.
Pacific Coast Representative

KOMPAK
TRADE-MARK
REG. IN U.S. PAT. OFF.

INDEX TO CONTENTS, PAGE 4

ADVERTISERS' INDEX, PAGE 29

Belgian-American Coke Ovens Corporation

THE BELGIAN-AMERICAN COKE OVENS CORPORATION has been recently organized as a United States Company. It has acquired all the patents and rights in the United States and Canada of the Franco-Belgian Coke Ovens Corporation of Brussels (Belgium) for the construction of the several types of Piette System By-product Coke Ovens and Recovery Plants.—

More than 1500 Piette ovens have been built and are in operation in several countries in Europe. Previous to the organization of the Belgian American Coke Ovens Corporation, a demonstration battery of Piette ovens has been erected at the coke station of the Laclede Gas Light Co., St. Louis, Mo., and is being successfully operated by the latter company after very minute tests and measurements of yields were made during thirty consecutive days.

Inspection of said demonstration battery is invited and complete information on the remarkable yields shown by same will be supplied on application.

The main characteristics of the Piette Ovens are:

The ovens are of the horizontal type with vertical flues, transverse regenerators and reversing arrangement. The construction is the simplest there is and the shape bricks are less numerous than anywhere else. The maximum of stability is attained by building the ovens proper on an absolutely rigid monolithic bloc.

The method of feeding the heating gas by regulation tuyeres enables a distribution at every point of the oven walls of the exact amount of gas required for a perfect coking.

The regulation sections for the control of the gaseous currents are calculated before construction and exclude the need of numerous dampers and sliding bricks.

The simplicity of the regulation has been exceeded nowhere.

The checkerworks of the regenerators situated in the longitudinal galleries are crossed transversely by either the waste gases or the air, securing the equalization of the temperature in the whole battery without preventing the isolation of any one oven in case of stoppage.

The arrangement of the galleries in the foundations realizes a superior cooling of the waste gas by the incoming combustion air besides reducing the loss of heat by radiation.

The BELGIAN-AMERICAN COKE OVENS CORPORATION is prepared to contract for the building of Piette By-Product Recovery Coke Ovens, with or without recovery of heat, also for plants for condensation and distillation of tar, production of sulphate of ammonia or concentrated liquor, recovery of benzol and carbolic acid, manufacturing of pure products: volatile alkali, benzene, toluene, xylene, naphthalene, phenol.

Offices: 686 East Catalan Street, St. Louis, Mo.
25 Broad Street, New York, N. Y.

American Gas Journal
Formerly American Gas Light Journal

Vol. CXV, No. 21 NEW YORK, NOVEMBER 19, 1921 Whole No. 3324

Indianapolis Gas Company Surrenders Franchise

Now Operating Under Permit from City

By WALTER S. GREENOUGH

The Citizens Gas Company, of Indianapolis, again has come very much into the limelight before its public. The big utility late in August took advantage of a recently-enacted law to surrender its franchise from the City of Indianapolis, and accept an indeterminate permit under the public utility law, thereby making necessary probably the negotiation of a contract with the city of Indianapolis, under which future regulatory power of the city over the utility shall be exercised, the Public Service Commission taking active jurisdiction over many phases of the growth of the company, including all rate-making powers.

Here is a description of the method used by the Citizens Gas Company of Indianapolis to solve its problems when disaster faced it. There can be no dispute with the local authorities under such an arrangement.—Editor.

Coincidently with the surrender of the franchise the big Indiana gas utility filed with the commission and gave to its stockholders its annual report for the year 1920, in which it showed that year as the most prosperous in the history of the corporation. In the report and in a letter, which J. D. Forrest, secretary of the company and its general manager, sent to the stockholders, it is clearly pointed out that the first six months of 1921 have seen such a serious change in the company's business that even the regular dividend—due at this time of the year—has had to be passed.

The report goes into the business of the company during 1920 in great detail and shows why the earnings were so large. Then the officials of the company frankly face the future and show the public why it was impossible to continue to operate on a 60-cent basis for by-product gas. The commission recently granted the company authority for a 50 per cent increase in its gas rates.

The company also has before the Indiana commission a petition for authority to issue $1,000,000 in 7 per cent preferred stock, to take up certain bonds and make certain improvements. In his letter to stockholders Mr. Forrest said:

"To the Stockholders of the Citizens Gas Company:

The trustees and directors of your company have decided that the best interests of the company and its stockholders will be served by a financial plan which includes, as a first step, the issue and sale of 7 per cent preferred stock.

"In due time an offering of this stock will be made to you, and later to the public of Indianapolis; and we trust that the present stockholders will take advantage of this opportunity to increase their investment in the securities of the company.

"We take this occasion to send you the report for the year 1920 which, for reasons given you at the time, could not be mailed with the last dividend checks. This report shows that 1920 was the best year in the history of the company. It is proper to add that the first six months of 1921 have been the poorest half year in the history of the company. The business will necessarily suffer until the general business of the country revives, when your company will undoubtedly continue the record of prosperity which it has had in the past.

"In response to inquiries which some stockholders have made about the next dividend, which is usually declared about this time, it is necessary to state that so long as the company is obliged to borrow heavily on account of insufficient capital, it is deemed unwise to take action on the dividend. You will recall that dividends which are not paid at the regular time are to be made up in the future.

"By order of the board of directors,

"J. D. FORREST, Secretary."

Discusses 1920

The report of the company begins with a general discussion of the unusual features of the year 1920 in the gas industry and in the general business field of

the United States. The discussion deals directly with the stagnation in industry during the latter weeks of 1920 and the consequent effect on the gas company.

The report also goes into the financial situation of the company very definitely, showing that it is perhaps the most strongly entrenched company financially—in so far as future financing possibilities may be concerned—of any utility in Indiana. The company shows a gross volume of business for 1920 of $9,121,396.62 and shows that it has built up a surplus of more than one-half million dollars. It further shows—and this is a point in which the gas industry throughout the nation will be interested—that during the year 1920 the percentage of gas earnings to the total gross volume of business was but 20.65 per cent. Truly, the Citizens Gas Company has been operated as a by-product plant, with the gas consumers reaping the benefit of greater service because of the vast volume of by-products sold.

The report follows:

Report of the Citizens Gas Company of Indianapolis —Year Ending Dec. 31, 1920

To the Stockholders of the Citizens Gas Company:

We submit herewith the report of operations of your company for the year 1920.

As you will note from the statements given below the total volume of business during the year considerably exceeded that of any previous year, and the net earnings were likewise larger than those of any previous year. These features of this report, taken without any explanation, may be misleading. There were two outstanding and radically opposed conditions in the year's operations which require some special mention in order that the report for the year may be fully understood.

First, the general business activity of the country, together with the shortage of fuel, created a demand for your company's products which was entirely without precedent. Especially was it true that the demand for coke for industrial purposes was even stronger than during the period of war activities, and prices obtained, even with the limitations imposed upon us by our contracts, were unusually remunerative. Like all other industries, this one suffered during the greater part of the year from the coal shortage and transportation difficulties. The railway strikes and the continuing inability of the railways to afford full transportation facilities made it difficult to obtain adequate supplies of coal for the operation of the company's coke ovens. During the entire period of intense business activity, it was never possible to operate the ovens at full efficiency. Had it been possible to obtain a full coal supply, the earnings of the company for the year would have been much greater.

Second, the collapse of general business and the almost complete stagnation of manufacturing industries during the last six weeks of the year necessarily cut down the earnings of your company to such an extent as to wipe out a very great proportion of the unusual advantages of the greater part of the year. The consequences of this change in general business conditions were unfortunate for your company in two respects. The demand for your products almost completely disappeared after the middle of November, thus materially reducing the earnings of the company for the calendar year and at the same time cutting down its financial resources. But even more marked than this reverse, in its bearing on the business of 1920, was the depreciation in inventory values which your company, in common with other business concerns of the country, was obliged to incur. On account of the obligation of the company to exercise due diligence in protecting the gas supply of Indianapolis during the winter months, it became necessary to purchase large supplies of coal during the summer and early autumn regardless of price. The depreciation in value of coal supplies, as measured by the market prices at the close of the year, was $225,000, while other large supplies carried by your company likewise underwent a considerable shrinkage. Of course, these conditions at the close of the year seriously reduced the net earnings for the year.

Nevertheless, the net results for the year would still be very satisfactory, were it not for the fact that the business depression which curtailed the earnings of 1920 still continues, with every indication that the market for the leading products of your company cannot get back to normal before the latter part of the year at best.

The shrinkage in business at the close of the year, together with the general opinion that the depression would continue for many months, caused your directors to file a petition with the Public Service Commission on Dec. 16 for an increase of 50 per cent in the gas rate. It had become apparent to your directors that the revenues of the company from sources other than the gas business were not in themselves large enough or sufficiently stabilized to warrant the company in endeavoring to secure the additional capital which the gas demands of the community made it important to invest in the business. The change in general business conditions toward the close of the year made it apparent that this matter could no longer be postponed. After investigation the commission approved the full increase, effective May 4, 1921. The increase in revenue on gas sales equal to those of 1920 would be at the rate of more than $900,000 a year. Beginning after four months of very bad business and with no prospect of an immediate revival, such an increase in revenues cannot make the earnings for the first half of 1921 favorable; but a return of general business to anything approaching normal conditions would enable the company, with this added revenue, to restore its credit and proceed with the improvements which have long been needed to enable it to meet the steadily increasing demands for gas service. No predictions can be made for this company's business except in relation to the general business of the country

Since the middle of the year 1909 Indianapolis has had the advantage of a gas rate lower than that of any other city in the United States, while since 1915 the rate has been the lowest in the world. The savings to the people of Indianapolis from the gas business of your company have amounted to nearly $10,000,000, and it has ever been the desire of your directors to keep the price of this necessity of modern city life as low as was practically possible. The application for the increase was made reluctantly, but with the absolute conviction that it was unavoidable. It is believed that after the disposition of gas rate cases pending in many cities in the United States, the rate of 90 cents will still give the city of Indianapolis the

Miscellaneous Statistics—Showing Growth and Changes in Company's Business

	1920	1919	1918	1917	1916	1915	1914
Coke production—tons...	517,341	461,060	391,451	410,771	443,916	350,153	335,276
Ammonia production—lb.	2,719,114	2,632,677	2,429,386	2,678,986	2,940,502	2,602,733	2,121,137
Coal-tar production—gal..	4,345,726	4,289,556	3,822,498	4,211,029	4,723,430	4,107,715	3,892,767
Light-oil production—gal.	1,095,409	1,283,590	1,245,124	1,148,800	1,203,739	314,999	.....
Gas production—M cu. ft.	3,229,268	2,865,558	2,577,458	2,939,811	2,649,503	2,386,963	2,219,346
Gas sales—M cu. ft.....	3,051,634	2,698,589	2,513,774	2,737,322	2,390,635	2,190,112	2,108,398
Coal carbonized—tons....	637,123	589,936	506,817	534,154	571,516	468,990	437,556
Total inventories at close of year	$1,327,972.53	$909,889.04	$1,233,052.58	$601,001.81	$547,870.52	$384,022.82	$322,567.96
Dividends paid	200,000.00	159,450.00	150,000.00	218,198.03	250,008.94	87,493.18	87,192.97

distinction of having the cheapest manufactured gas in the United States.

Your attention has been called heretofore to the fact that considerable improvements and enlargements to plants and distribution systems must be undertaken as soon as proper financial arrangements can be made. Even with the favorable earnings of 1920, your directors did not feel that it was safe to incur the heavy additional fixed charges and taxes which would have been involved in any financial plan which would have made it possible to carry out the extensive improvement program which is considered necessary to meet the needs of the community. The business depression has caused the creation of a floating debt to meet working capital requirements. the surplus of earnings over current requirements having already been absorbed in permanent improvements. Such financing as can now be attempted will be primarily to provide working capital, but as soon as practicable steps will be taken to obtain the additional capital required to undertake important construction work.

Your attention is called to the comparison given below of the earnings for the year 1920 with those of the preceding five years. For purposes of further comparison a statement is given showing certain other important statistics which reflect changes in your company's business and condition. One of the prominent features of the more recent development of the business has been the rapidly increasing demand for gas. The depression in business has considerably reduced the consumption of gas for industrial purposes, while the very mild winter with the abundant supply of other fuels has reduced the demand for gas for heating purposes in homes. This situation enabled your company to meet all gas demands with ease during the past winter. The change, however, has consisted chiefly in an absence of the tremendous peaks in gas demand which it has been impossible to supply in previous winters. The average demand except for the recent drop in consumption for industrial purposes, has shown a constant increase. It is apparent that your company must be prepared to respond to a constantly increasing demand for gas, with which the demand for other products cannot always keep pace. Therefore, for the present at least, we must prepare for a larger production of gas and depend to a greater extent on revenues from gas. than it has been necessary to do for some years past.

Gross Earnings

The earnings statement in this report does not show the total volume of business because it is our practice to give in the regular report only the net earnings of the so-called non-operating departments. Below the total volume of business is shown:

	1920	1919
Coke earnings	$5,990,850.94	$3,330,951.66
Gas earnings	1,884,015.68	1,622,523.08
Ammonia earnings	499,119.65	366,606.19
Coal-tar earnings	191,292.27	195,134.85
Misc. operating earnings.	5,317.85	3,865.69
Benzol earnings	309,786.89	349,170.85
Cyanide earnings	.....	489.03
App. and piping earnings.	155,743.69	138,249.85
Pintsch gas earnings....	55,618.47	41,760.23
Interest	23,006.75	14,342.91
Discounts	6,644.43	5,305.90
Miss. non-operat'g earn..	.....	25.00
Gross volume of business	$9,121,396.62	$6,068,426.24
Percentage of gas earnings to total.....	20.65	26.74
Total cash turnover.....	$9,749,023.02	$7,528,988.22

Receipts and Disbursements

Receipts—	Jan. 1, 1920 June 30, 1920	July 1, 1920 Dec. 31, 1920
Balance	$ 322,867.00	$ 428,710.57
Accounts receivable	3,919,758.87	4,475,691.65
Interest and discount...	10,562.65	11,390.56
First & refunding bonds	48,720.00	.....
U. S. Treasury cert.....	300,000.00	150,000.00
Liberty bonds	.....	13,635.00
Notes payable	.....	300,000.00
Miscellaneous	31,072.28	31,522.30
	$4,632,980.80	$5,410,950.08

Disbursements—	Jan. 1, 1920 June 30, 1920	July 1, 1920 Dec. 31, 1920
Bond interest	$ 127,735.44	$ 119,227.73
Leasehold rental.....	193,775.00	193,775.00
Dividends	100,000.00	100,000.00
General mortgage bonds	150,000.00	22,000.00
Bond sinking fund.....	14,615.00	14,615.00
U. S. Treasury cert.....	350,000.00	100,000.00
Liberty bonds	13,500.00	.....
Salaries and wages.....	652,113.14	764,065.15
Accounts payable	2,386,330.78	3,774,809.39
Taxes	109,648.74	110,803.55
Notes payable	88,000.00	.....
Miscellaneous	18,551.83	22,589.97
Balance	428,710.57	189,064.29
	$4,632,980.80	$5,410,950.08

Dividends Paid Jan. 1 to Dec. 31, 1920

March 29—regular semi-annual dividend No. 21 (5 per cent).....	$100,000.00
Sept. 28—regular semi-annual dividend No. 22 (5 per cent).....	100,000.00
	$200,000.00

Dividend Declared

A regular semi-annual dividend (No. 23) of 5 per cent was declared out of earnings to Dec. 31, 1920, payable March 29, 1921, to stockholders of record at the close of business March 10, 1921.

J. D. FORREST,
Secretary and General Manager.

Indianapolis, May 10, 1921.

Voting Trustees—Thomas L. Sullivan, president; Thomas H. Spann, vice-president; Lucius B. Swift, Henry Kahn, Gustav A. Schnull.

Directors—John R. Welch, president; A. F. Potts, vice-president; J. D. Forrest, secretary; G. A. Efroymson, treasurer; H. W. Bennett, J. H. Hooker, H. H. Hornbrook, Robert Lieber, Franklin Vonnegut.

Following the announcement of the surrender of the franchise of the company, Samuel Ashby, corporation counsel for Indianapolis, said the city would proceed to the negotiation of a contract with the company in a similar manner to that in which the city is seeking to fix contract restrictions on the Indianapolis Street Railway Company, which now is in similar circumstance to the big gas company, in so far as regulation is concerned.

(*Continued on page 465.*)

Echoes of the A. G. A. Convention

Little Items Picked Up Here and There

That the enthusiasm which held sway at the third annual convention of the American Gas Association in Chicago last week was carried away by those who attended is shown by the many comments that were heard as the delegates scattered for their homes. The meeting was pronounced one of the most successful, if not the most successful, ever held by the gas industry, and the statement was made that a high objective had been set for future gatherings.

An encouraging feature of the convention was the large attendance at each of the sectional meetings. These meetings also developed a great deal of discussion, and it was remarked that the service rendered by the AMERICAN GAS JOURNAL in publishing before the convention so many papers had aided in this feature.

Much of the success of the exhibits was due to the efforts of Charles A. Luther, of the Peoples Gas Light & Coke Company, Chicago. Mr. Luther turned a force of men into the exhibition rooms after they had been surrendered to the association, and under the most adverse conditions he brought order out of chaos. Percy H. Hall, assistant secretary manager of the association, paid a high tribute to the aid rendered by Mr. Luther in this connection.

A visitor who declared that the convention was among the greatest ever was A. I. Gardner, of Riter-Conley, Pittsburgh, Pa. Mr. Gardner said that the gas industry had certainly progressed during the past year, and added that he looked forward to a most prosperous year for the gas world during the coming twelvemonth.

Wayne Stacey, of the Stacey Bros. Manufacturing Company, declared that not only was the slogan of his company "Ability to Serve" but the company was carrying that out in the service it renders the gas industry. Mr. Stacey declared himself greatly pleased by the success of the convention.

A regrettable error crept into these columns last week and we hasten to correct it. In telling of Jim Conroy's folks we stated that they were back in Minnetonka, Wis. Our attention has been called to the fact that these folks are in Lake Minnetonka, Minn. From what we heard, Jim expects to discover more folks in that section within a short time. Developments will be faithfully reported by this journal.

George H. Cressler, general sales manager of the Stacey Manufacturing Company, anticipates a splendid development during the coming months in the line of business. Mr. Cressler was the center of a host of friends during the entire convention.

J. D. Sayer, of the Missouri Fire Brick Company, enjoyed the convention in every way. We have his word for it.

Walter E. Claus, vice-president of the Claus Automatic Gas Cock Company, was extremely busy during the entire convention. Mr. Claus did not have time for a long interview, but that he was pleased was shown by his pleasant smile.

The representative of the AMERICAN GAS JOURNAL was told to be sure to mention the glad rags of Frank H. Knapp. They have been mentioned and our observant friend is obliged. Mr. Knapp was attending an evening function and was garbed in the height of fashion.

J. L. Cummings, of the S. Obermayer Company, was interrupted just as we were prepared to interview him. We feel sure that his remarks would have added to the value of this column.

John F. Weedon, superintendent of the advertising department of the Peoples Gas Light & Coke Company, Chicago, was a visitor to the convention. Mr. Weedon is one of the most widely informed men in the gas business on the question of what will appeal to the consumer, and he is batting 1000 per cent in Chicago.

W. B. Wardell, of the Welsbach Company, was largely responsible for the success of the guessing contest. We don't know of an individual who failed to file a guess as to the number of mantles contained in a glass.

A. L. Lindsey, of the advertising department of the Peoples Gas Light & Coke Company, Chicago, was an interested spectator at the exhibits.

Governmental Regulation of English Calorific Standards*

A Preliminary Report Made After Two Months' Observation

By ALFRED I. PHILLIPS

During the last ten years we have noted with interest the general adoption of calorific standards in England, the reduction of such standards to value far below those considered practicable by many of our gas engineers and regulating authorities, and finally the passage of the gas regulation act of 1920, under which each undertaking is left free to choose and declare the heating value of the gas which it intends to supply. Under this act, calorific standards ranging from 400 B.t.u. to 550 B.t.u. have been declared, and gas of all heating values between these limits, and in a few cases even below 400 B.t.u., is to-day being furnished alike by municipal corporations and private companies.

Viewing these conditions, it is natural to inquire why such low calorific standards have been adopted, what has been the success of their application, how the gas regulation act is working out, and what conclusions may be drawn from the English situation which might be helpful to ourselves.

The matter of calorific standards in England cannot be considered by itself—it is too intimately connected with methods of regulation, rates, manufacturing processes, competition with other fuels and conservation. Furthermore, the difference between our conditions and those in England is marked, and in order to lead to an intelligent understanding of the subject, it has seemed advisable to include in this report:

1. A brief resume of some of the conditions peculiar to England which have or have had a particular bearing upon the development of calorific standards.
2. A history of calorific standards in England, including the events leading up to the adoption of the gas regulation act.
3. Reasons for the adoption of the present standards under the gas regulation act.
4. Effect of low heating value standards on the consumer.
5. Effect of freedom to choose standard and other related conditions on the development of the gas industry in England.

Conditions Peculiar to England

In considering the question of calorific standards, it must be clearly kept in mind that practically all utility regulation in England has been accomplished directly through acts of Parliament, and in comparatively few instances, of which the gas regulation act affords an outstanding example, has the sovereign power of this body been delegated. Matters of new capital, rates, and in most instances standards also have been handled in special acts applicable only to the particular undertaking in question. Uniformity in standards as we have it in our various States never appears to have existed in England.

Parliamentary regulation extends quite generally to municipal corporations as well as private undertakings, and not only must new bond issues for extensions in corporation departments be approved in detail but their standards and the maximum prices which they may charge are in most cases fixed. Such departments are usually financially separate from the general city administrations, and in effect are not unlike private concerns except that their capital consists entirely of bonds. In fact, where a corporation department serves adjoining municipalities, the latter usually treat it as they would a private enterprise.

Private companies may be divided into two classes: (1) Maximum dividend companies, in which the maximum price which may be charged and the maximum dividend which may be paid are fixed by Parliament, and (2) the sliding scale companies, the larger and by far the more important class. Under the sliding scale, which the virtual division of profits between the company and consumer is intended to lend stimulus to increasing sales and improving efficiency. With such safeguards as the maximum dividend or sliding scale the undertakings are left comparatively alone to work out their own salvations, and at present at least there is a distinct tendency to avoid hampering them with unnecessary regulation.

It is also important to note that politics does not enter into English utility regulation and undertakings are not opposed in their reasonable requests because of political reasons. In most cases politics play little, if any, part even in municipal gas undertakings.

Finally, the public relations question as we know it can hardly be said to exist. Whether this has been in whole or in part due to the sliding scale, the method of regulation or the character of the people, I am unable to say, but I believe that all of these factors have had an important influence.

The ownership of the companies is also of importance. They are almost universally independent organizations, not affiliated with other gas or electric undertakings. Competition with electricity and other fuels is very real, and with their greater freedom in fixing rates the English gas undertakings in some respects more resemble our commercial concerns than our utilities.

Turning to the more technical side of the question, we find that England is a country of coal gas plants. Carbureted water gas plants as auxiliaries were installed in many cases prior to the war, but were used principally to handle peak loads. Their low first cost and flexibility of operation made them desirable for this purpose.

England never had candle-power requirements of twenty or over, such as were formerly common in the

*Presented at the American Gas Association convention in Chicago.

United States. In fact, by 1910, fourteen candle-power by No. 2 Metropolitan or London Argand burner seems to have been the usual standard, but the heating value varied with the differences in manufacturing conditions.

The character of the English coal is also of some importance. The ordinary gas coal there obtained probably does not contain much over 30 per cent of volatile combustible and the gas produced is generally somewhat lower in illuminants and methane, and hence in heating value, per cubic foot, than that which we obtain from most of our American coals under similar conditions. In fact, cannel coal and liquid enrichers seem to have been generally used in England in the past to maintain the candle-power required.

Again, the older types of gas ranges, or cookers, as they are generally called in England, have no gas or air adjustment, and thus we should not expect to find such a great range of gas quality practicable there as in this country. That greater reductions in calorific standards have proved practicable in England thus has special significance.

History of English Calorific Standards

In 1905, as the result of an investigation by a departmental committee appointed by the Board of Trade, there was passed the London gas act of 1905, which directed the London gas referees to test for the calorific power in addition to illuminating power, but no standards of heating value were fixed and the existing standards of illuminating power were not changed. In fact, the South Metropolitan Company and the Commercial Gas Company, two of the three London metropolitan companies, continued to operate under candle-power standards until late in 1920 and early in 1921 respectively.

In 1909, the Gas Light & Coke Company, of London, the oldest and now the largest single gas company in the world, in promoting a bill, requested a reduction in illuminating power from sixteen to fourteen. The London County council requested that a calorific standard with penalty for its violation be included. The result was that this company had imposed upon it a double standard of fourteen candle-power and 125 net calories per cubic foot. In respect to the calorific value, however, no penalty was to apply unless the quality fell below 112½ net calories. Thus, on Jan. 1, 1910, the first legally prescribed calorific standard for town gas in England came into effect—about one year and one-half after the Wisconsin Commission adopted the first State-wide heating value standard in the United States.

In 1912, nearly three years after the passage of the Gas Light & Coke Company's act, the Wadsworth and the South Suburban Companies were also granted calorific standards. In fact, the act of the latter company provided the first complete substitution of heating value for candle-power in England. Thereafter prior to the war a few more companies had heating value standards substituted for their candle-power requirements.

In nearly all of these cases, 540 B.t.u. with a penalty point of 475 to 500 B.t.u. (or the approximate equivalent of these figures in calories) were the value fixed. In actual practice, however, the penalty point seems to have become a minimum requirement similar to the 528 B.t.u. standards of Massachusetts and Connecticut and the prescribed standard merely a sort of ideal to which great attention was not paid. The actual heating value carried under these early regulations seems in fact to have varied from a little over 500 B.t.u. to about 530 B.t.u.

In 1916, about two years after the beginning of the war, there was passed the gas (standard of calorific power) act of 1916, which is second only in importance in connection with this subject to the gas regulation act of 1920. Under the former any company might apply to the appropriate Government department to have a calorific standard substituted for illuminating power. A number of companies applied and in nearly every case a standard of 500 B.t.u. was fixed with penalty for failure to comply with it. It is to be noted, however, that the standards fixed under this act did not in effect permit the maintenance of materially lower values than those carried under the previous above-mentioned acts.

Meanwhile, the requirements of the Government for light oils became urgent and were splendidly met by the English gas industry.

While candle-power standards existed during the war, little if any attention was paid to them. The larger undertakings with calorific standards made efforts to maintain them, but the difficulties of doing so seem generally to have become too great for the smaller plants. Transportation difficulties were serious since much of the railroad rolling stock was in France; coal and oil became harder and harder to obtain and of poorer quality; there was lack of men for current operation; repairs were practically out of the question, while added to all this there was in many places a great increase in the demand for gas by munition works. The main consequences of this situation were twofold, and the English calorific standards situation to-day is largely an outgrowth of them.

First.—Many of the smaller plants overexhausted their retorts in the effort to obtain every foot of gas possible from their limited supplies of coal. The retorts were generally in poor repair and high percentages of inerts and low calorific values were the result. This "stretching of the gas," as it has come to be called, appears to have become very common and, in fact, the opinion was expressed to me that it had been the most usual cause during the war of reduction in calorific value. Thirty to forty per cent of inerts do not seem to have been unusual. In most of the larger undertakings, however, this situation did not exist.

Second.—There was a radical reduction in the use of gas oil for carbureting water gas, and this, of course, led to lower heating values. Records show that reduction in the use of oil became very marked during 1917 and finally culminated in the gas works (Ministry of Munitions) order and general regulations of 1918, under which the use of gas oil was prohibited except where absolutely necessary to maintain the gas after scrubbing at 450 B.t.u. This same order required that all coal gas be scrubbed and that, generally speaking, the calorific value of the gas before scrubbing be maintained as nearly as possible at 500 B.t.u. unless oil were required to do so.

(*Continued on page* 468.)

Accident Records

How to Compile Them and How to Use Them

Prepared by Engineering Department, National Safety Council

The principal purpose of accident records or statistics is to prevent accidents by—

(a) Showing the operating executives and the safety department where accidents are occurring and from what causes, so they may know where to concentrate their efforts for prevention, and

(b) Attracting the attention of workmen, and stimulating rivalry between divisions, shops or departments, so that the superintendents, foremen, and workmen will strive to produce a record which will compare favorably with other departments and with their own past record.

Any collection of figures, no matter how interesting, which cannot be used for one or both of these purposes, is practically valueless for accident prevention and has no place in an efficient organization.

Collecting Accident Data

Accident records, to be of practical value, must include the complete story from the time the accident occurs until the injured person is back at work or the case otherwise adjusted and closed. This requires co-operation between the safety department, medical department or hospital, operating department, employment department and often the legal or the accounting department. Several members of the council have found it possible to work out a system which, with a minimum expenditure of time in filling out report blanks, insures that each of these departments will know what the others are doing, and presents a history of the cost from which monthly and yearly records may be easily compiled.

While details must be varied to meet local conditions, the general outline of the system used in different industries is fairly uniform. The method and the forms suggested below can be adapted or expanded to meet the needs of almost any employer.

Prompt Report Necessary

When an employee is injured he should report at once to some authorized person who will direct him to a physician. Failure to secure prompt treatment may lead to serious infection.

Daily Record of All Accidents

The medical department, hospital, or first-aid attendant should keep a daily record of all injury cases which are reported, whether serious or minor. Even apparently trivial injuries may later become serious and result in controversy, and in such cases a record made at the time of injury will prove valuable. This daily record should show the name and check number of the injured, cause and nature of injury, where accident occurred, the treatment given, the disposition of the case. Records of all dressings are usually kept in a book using one line for each case.

Hospital Record Card

In addition to the daily record book the medical department should, at the time the injured employee reports for first treatment, start a "case" record card and should make suitable entries thereon from time to time until final recovery. Some members use such cards for lost time cases only; others use them for all injuries which require medical attention. Unless the safety department has convenient access to these records, the medical department should send a report to the safety department, giving the necessary information.

Notice of Injury

In the case of all injuries which cause a loss of time, the medical department should at once notify the safety department, the shop foreman and the employment department. The safety department should be notified so that an investigation may at once be made of the circumstances surrounding the accident. The shop department should be notified so that the foreman also may investigate, make a report of the accident, and correct any hazardous practice or condition. The employment department should be notified so that the cause of absence may be correctly noted.

Report of Accident

As soon as the foreman is notified of an accident, he should make an immediate investigation, make a report and send it to the safety department. In plants having a well organized safety department, a separate investigation is made by an inspector of that department. The results of such investigation may be separately reported on form 3 or some similar form, including a more complete narration of the accident, description of machinery, etc., and in many cases a sketch or photograph made as soon as possible after the accident.

Report to State

Practically all States now have compensation laws and require a report, on a standard form, for all accidents causing more than a specified loss of time. To insure that such reports will be accurate and complete, they should be filled out by the safety department.

That the report may show correctly the wage of the injured person, it is necessary that the accounting department furnish this information. A simple form may be prepared for this purpose, with space for the names of several men on a single sheet. Since the methods used by various States differ in regard to the calculation of compensation, it is necessary that each company instruct the accounting depart-

ment as to the proper method of computing wages for this purpose.

Record of Employment

It is to be assumed that the employment department has a permanent record of each employee, showing employee's sex, age, race or nativity, whether married or single, number of children and other dependents, the date employed, whether at the time of employment he had any physical defect or deformity, such as defective sight or hearing, and possibly other such information. It is advisable that the information given by employee at time of accident be checked with his employment record card.

Return to Work Notice

When an injured workman has recovered sufficiently to return to work, the medical department should notify the safety department, with copies to the foreman and the employment department if desired. If a practising physician attends the injured person, or if the plant does not have a dispensary or hospital, it may be more satisfactory for the doctor to notify the safety department (preferably in writing) when injured men are able to resume work, after which the safety department will notify the departments concerned.

Tabulation of Accident Data

With a satisfactory system for recording the facts in connection with each accident, the next step is to compile the data so as to be useful. A uniform method of tabulation should be followed so that one plant may be compared with another and one industry with another. The National Safety Council's committee on uniform industrial accident statistics recommends the use of the standard method approved by the International Association of Industrial Accident Boards and Commissions, the essentials of which are stated below:

Standard Definitions and Tables—Tabulatable Accidents, Diseases and Injuries

All accidents, diseases and injuries arising out of the employment and resulting in death, permanent disability, or in the loss of time other than the remainder of the day, shift, or turn on which the injury occurred should be classified as "tabulatable accidents, diseases and injuries."

Compensable Accidents, Diseases and Injuries

These, as used in any report in accordance with the practice in any particular State, should be shown separately and clearly defined.

Permanent Total Disability

To this group should be assigned every accident, disease or injury which is designated by statute as permanent total disability, or which permanently incapacitates the workman from performing any work continuously in any gainful occupation.

Permanent Partial Disability

To this group should be assigned every accident, disease or injury (less than permanent total disability) which results in the loss of any member of the body or part thereof, or in the permanent impairment of any function of the body.

Accident Frequency Rates

The practical value of accident statistics is greatly increased by the use of frequency rates. The basis of all rates is necessarily the number of men exposed to the risk of accident. Since the working time varies it is necessary to reduce the time factor to a standard basis. The Association of Accident Boards recommends that accident frequency rates be expressed in terms of the number of lost time accidents per 1,000,000 hours actually worked by the employees.

Temporary Disabilities

In the standard tables suggested the classification, "Temporary disabilities," is divided into three classes; over two weeks, one week to two weeks, and one week and under. These divisions are made because in some States accidents are compensable after the first week, while in others they are compensable only after the second week. For comparing plants and industries located in different States these subdivisions are desirable.

Accident Severity Rates

To supplement the accident frequency rate it is desirable to determine also the rate of accident severity. By indicating the severity of all injuries on the basis of time lost, which is more definite and stable than the wage loss, we obtain an accurate measure of the hazards of any plant, department, or operation, and of the results accomplished by accident prevention work. Accident severity should be computed in terms of days lost per 1,000 hours worked. In computing days lost by temporary disabilities, the actual duration of disability in working days should be used. The day of the accident should be counted as the first day.

To make the severity record complete, some account must be taken of fatal accidents and permanent disabilities. A scale of arbitrary equivalents for such injuries, in terms of days lost, is advocated by the International Association of Industrial Accident Boards and Commissions and by the United States Bureau of Labor Statistics and will be found in bulletin 201 of that bureau. Some members of the council keep a separate record of fatal and permanent injuries.

Classification by Causes

The classification of accidents by causes is of the utmost importance, because it directs attention to those conditions in the plant which require correction. Nearly every accident results from a combination of causes. Authorities agree, however, that accidents should be ascribed to the proximate or imme-

(*Continued on page* 467.)

As the Journal Views It

TABLE OF CONTENTS

The Table of Contents will be found on page 4 of the advertising section, Hereafter it will be found on that page each week.

"Ultimately Lower Rates"

When the question of rates arises, as it frequently does, and gasmen are asked why they do not reduce their charges to consumers and the example of reduction in other commodities is cited, then there is an answer which has been prepared by the Indiana Public Utility Association that can be given. It follows:

"Public utilities have no war record to live down, for the sufficient reason that they could not be accused of profiteering; in fact, the public records do not show any payment of excess profit taxes during the war or thereafter by any public utilities."

Surely this is answer enough for those who declare that gas rates generally are too high and that security holders are waxing wealthy on their gains. Men in the gas industry know how absolutely fallacious is this line of argument, for even to-day, with some relief granted, there are many companies that are staggering along under the load that was piled on their shoulders during the war and which they have not been able to raise.

The Indiana Public Utilities Association has prepared and distributed among the public served by its members a booklet, which is a mighty big step in the right direction and which similar bodies could well follow with great good resulting.

The booklet tells the story of what is necessary if we are to have ultimately lower rates, and it certainly provides much food for serious thought by the public. A description of this booklet will be published in Nov. 26 issue of this journal. We hope that every reader of the JOURNAL will carefully study over the article in question and then utilize some of the splendid material that is thus provided.

The Value of Safety Records

Gasmen as a rule appreciate the value of carefully prepared and kept records, but one of the most important records, that of the safety work that is carried on, frequently is neglected. In this week's issue of the AMERICAN GAS JOURNAL the value of these records is pointed out and, in addition thereto, it is shown how they can be applied in such a way as to reduce accidents.

The series of articles which have been appearing in these columns each month has aroused a great deal of favorable comment, but we feel that none is more important than the one which we present this week. Accident prevention is an important feature of the work of most gas companies these days, and the actual saving in dollars and cents that is accomplished shows just how valuable it is.

We hope that our readers will closely follow the series through, for every branch will have been covered when it comes to an end.

Indianapolis Gas Company Surrenders Franchise

(*Continued from page* 460.)

Under a provision of the Citizens Gas Company original franchise the property of the company might revert to the city at the expiration of a period of years, which now is relatively a short time away. Under the surrender of the franchise it is understood that this phase of the old franchise will not be possible of application by the city and the remunerative property, which the stockholders of the gas company have seen grow through many vicissitudes, will continue, it is believed, to belong to those whose money founded it and who have kept it going.

In the contract that is to be negotiated, Mr. Ashby said, he would attempt to include, if possible, the provisions of the old franchise which are of advantage to the city. Mr. Ashby was to ask for a conference with gas company officials at which a start would be made toward developing the new regulatory contract. The public utilities act in Indiana provides that after a company has surrendered its franchise and begun operation under an indeterminate permit from the commission, the commission shall have all rate-making powers over the utility, while the question of city regulations over the company shall be fixed by contract, ordinance or otherwise. Mr. Ashby, in the street car situation, has urged the contract method as preferable to the other.

How Work Will Be Handled

If a contract is agreed to it can be determined that the board of public works will issue orders for extensions and changes and regulate the laying of mains without requiring an ordinance from the council for these minor extensions and changes. Further, the city corporation counsel has held, the contract method would for a long time fix the regulatory power over the company, and thus serve to give stability to the company, whereas a regulatory ordinance could be changed on short notice.

60-Cent Rate Gone for Good

By the surrender of the franchise the company also is relieved from the franchise provision that the rate should never exceed 60 cents a thousand cubic feet. This is a tacit announcement that the 60-cent rate

Revenue Statement—Year 1920 Compared with Preceding Five Years

	1920	1919	1918	1917	1916	1915
Gas earnings	$1,884,015.68	$1,622,523.08	$1,434,710.99	$1,466,689.44	$1,282,560.19	$1,188,961.95
Coke earnings	5,990,850.94	3,330,951.66	3,386,231.22	2,458,224.79	1,641,052.95	1,165,756.03
Ammonia earnings	449,119.65	366,606.19	287,803.67	243,304.82	259,397.45	229,805.21
Coal-tar earnings	191,292.27	195,134.85	174,498.10	129,112.10	143,951.76	137,521.88
Misc. operating earnings	5,317.85	3,865.69	7,941.69	663.67	174.40	2,450.80
Gross operating earn.	$8,520,596.39	$5,519,081.47	$5,291,185.67	$4,297,994.82	$3,327,136.75	$2,724,495.87
Operating expenses	7,315,430.34	4,545,430.78	4,404,335.13	3,668,198.07	2,584,850.25	2,043,998.95
Net operating revenue	$1,205,166.05	$973,650.69	$886,850.54	$629,796.75	$742,286.50	$680,496.92
Taxes	314,875.22	258,135.56	148,745.90	115,134.60	105,388.22	84,292.58
Net operating income.	$890,290.83	$715,515.13	$738,104.64	$514,662.15	$636,898.28	$596,204.34
Net benzol earnings	$156,731.97	$224,296.45	$136,648.90	$227,349.08	$288,137.71	$126,225.85
Other net non-operating earnings	49,878.03	16,972.05	15,609.88	47,807.29	48,578.05	20,041.62
Total net non-operating earnings	$206,610.00	$241,268.50	$152,258.78	$275,156.37	$336,715.76	$146,267.47
Gross earnings	$1,096,900.83	$956,783.63	$890,363.42	$789,818.52	$973,614.04	$742,471.81
Leasehold rental	401,405.33	391,357.36	382,936.05	376,892.50	375,402.12	373,498.63
Net earnings	$695,495.50	$565,426.27	$507,427.37	$412,926.02	$598,211.92	$368,973.18
Interest	$245,543.29	$263,200.70	$130,881.01	$121,678.61	$110,582.99	$107,268.97
Amortizat'n of b'nd disc.	34,074.60	29,398.19	19,370.45	642.36	382.38	.....
Amortization leasehold expense	900.00	900.00	900.00	450.00	3,983.45	.....
Total interest and amortization	$280,517.89	$293,498.89	$151,151.46	$122,770.97	$114,948.82	$107,268.97
Surplus, available for depreciation and contingent reserves, sinking funds and dividends	$414,977.61	$271,927.38	$356,275.91	$290,155.05	$483,263.10	$261,704.21

Balance Sheet, Dec. 31, 1920

Assets—		
Property—		
Manufacturing plant and distribution system, real estate and miscellaneous equipment	$5,957,469.30	
Additions to leased property	263,951.18	
Inventories—		
Raw materials, manufacturing supplies, manufactured products, construction materials and supplies	1,327,972.53	
Accounts receivable	582,237.68	
Prepaid accounts	34,278.62	
Cash	216,514.35	
Liberty bonds	148,500.00	
Stock Milburn By-Products Coal Company	100,000.00	
Acounts subject to amortization	265,928.08	
Sinking fund assets	180,399.38	
Miscellaneous contingent and suspended accounts	199,950.00	
	$9,277,201.12	
Liabilities—		
Capital stock		$2,000,000.00
First and refunding bonds		2,923,000.00
General mortgage bonds		1,302,000.00
Notes payable		300,000.00
Accounts payable		707,865.71
Accrued accounts		381,170.32
Indianapolis Gas Company miscellaneous leasehold account		112,950.41
Miscellaneous contingent and suspended accounts		47,810.87
Depreciation reserves		802,163.85
Contingent & Miscellaneous reserves		171,086.77
Surplus		529,153.19
		$9,277,201.12

probably has gone never to return in Indianapolis. The 90-cent rate recently granted by the Public Service Commission was granted as a temporary measure of relief, but it is doubtful if the old 60-cent rate ever can be restored again. If the franchise had not been surrendered the old 60-cent rate would automatically have gone into effect again at the expiration of the "emergency period" for which the commission granted the increase.

Discussing certain of the franchise requirements, from which the company now will be relieved, and certain other matters pertaining to the numerous changes that the Indianapolis gas situation will undergo, Indianapolis papers had the following to say:

"There are several important provisions in the old franchise, from the city's standpoint, which Mr. Ashby hopes may be retained. One was the section of the franchise providing that eventually the company would become the property of the city. Another made it imperative that the gas supplied by the company always have at least 600 B.t.u. a cubic foot. This provision has not been complied with in recent years, the company having held it to be physically impossible. It is understood the company desires to be relieved of this requirement.

"Another provision that the city hopes to retain is that fixing the number of feet of new gas mains that must be laid annually, under order of the board of public works. The franchise also provides that the company shall never pay more than 10 per cent dividends on its common stock. All excess earnings would go into the betterment of the company's plant. It is likely the city would seek a new agreement as to this provision also.

"The old franchise provided that whenever the stockholders in the company shall have received by dividends or otherwise an amount equal to the money they have put into the company, plus interest at 10 per cent, the company shall pass into the hands of the city. It said also that if the company should become insolvent the city reserved the right to pay the indebtedness and obtain possession. At the expiration of the franchise, which would have been in 1930, if it had not been surrendered, it provided that the city could obtain possession by paying stockholders the balance due them on their stock.

"Mr. Ashby thinks these rights should be retained. He pointed out that the time the company was organized, it was with the purpose of serving the citizens and not for continued profit to the stockholders, and it was the original intention that the company should become the property of the city.

"It is likely the members of the city council will take an active interest in the fixing of the city regulation as to the quality of gas. Council members last winter and the winter before severely criticised the company for its failure to live up to the requirement for 600 B.t.u. a cubic foot. Last fall, when it appeared that the company would not be able to supply the city with all the gas needed, and of the highest quality, an effort was started for a separate agreement with the company, and a contract providing that gas could not be used except for certain fixed purposes, so that the quantity might be conserved, and that the company would do certain things to increase the quantity and improve the quality.

"The contract was defeated in the city council.

"The old franchise provided that the company must lay up to 10,000 ft. of new mains each year, as the board of works ordered. However, in the last several years this amount has become inadequate, and by a separate agreement the maximum of new mains was fixed at 35,000 ft. a year.

"That amount is not adequate now to take care of the city's growth, the board of works members and city civil engineer have said frequently. The paving of new streets annually requires 20,000 ft. of new mains, not taking into account the amount needed for new districts added to the city. The franchise provides that a petition for gas mains signed by three property owners, who will agree to use five or more grate burners, or fifteen or more burners, for each 500 ft. of the main extensions shall be granted. The city would probably wish this provision be included in the proposed new contract.

"Mr. Ashby points out that the provision of the franchise guarding against the payment of more than 10 per cent dividends might be handled through the company's relations with the Public Service Commission. The commission, so far as he knew, has never permitted an earning of more than 8 per cent on the valuation of a utility. If an 8 per cent earning would ever make possible the payment of higher dividends on stock than 10 per cent, the commission would likely take steps to reduce the rate which the company may charge. A petition for a reduction would likely be filed promptly.

"The city would wish to retain its right to inspect the company's books and property whenever it sees fit, it was said.

"If a new contract is agreed to, it probably would have clauses providing that service extensions and changes be made on the order of the board of works, as the franchise provided originally."

Accident Records

(*Continued from page* 464.)

diate cause, "to that condition or circumstance, the absence of which would have prevented the accident; but if there be more than one such condition or circumstance, then to the one most easily prevented."

For example, a workman passing through an aisle which is insufficiently lighted, stumbles upon a defective floor and throws his hand into an open gear which crushes off two of his fingers. Under this ruling, the accident is charged to the gear and not to stumbling or insufficient lighting, for had the gear been properly guarded, the workman would not have suffered the injury which he did—the loss of two fingers—though he might have been otherwise injured by his fall.

It is impossible to suggest a classification of causes which will be suitable for use in every plant. A list sufficiently detailed to cover every accident cause in every plant and industry would be much too long for practical use in any one case. The list given below is simply a skeleton outline and must be amplified by inserting the subdivisions which are most important in the particular plant or industry. For example, under "Power working machinery" a metal-working shop will insert such items as planers, shaper, millers, slotters, lathes, drill presses, etc., while a woodworking shop would include circular saws, boring machines, jointers, shapers, tenoners, etc. The last division, "Miscellaneous causes," includes flying particles (other than those set in motion by working machines or tools); doors, windows and gates (exclusive of elevators), asphyxiation, heat prostration, drowning and other causes not chargeable under any of the other divisions. For full list of causes see bulletin 201 of the United States Bureau of Labor Statistics. This list has recently been slightly revised, and up-to-date information may be obtained from the Bureau of Labor Statistics, Washington, D. C.

Classification of Accident Causes—Machinery

Prime movers.
Power-transmission apparatus.
Power working machinery.
(Insert principal machines used.)
Machines other than working machines.
Hoisting apparatus.
Elevators.
Cranes.
Derricks and jib cranes, etc.
Conveyors.

Vehicles

Cars and engines—steam and electric railways.
Mine and quarry cars and motors.
Plant trucks on tracks.
Automobiles and other power vehicles.
Animal-drawn vehicles (not mine or quarry cars).
Water craft.
All other vehicles.

Explosives, Electricity, Fires and Hot Corrosive Substances

Boilers and steam pressure apparatus.
Explosions of explosive substances.
Other explosions.
Electricity.
Conflagrations.
Hot substances and flames.

Poisonous and Corrosive Substances and Occupational Diseases

Falls of Persons

From elevators.
Into excavations, pits and shafts.
On level.

Stepping or Striking Against Objects—Falling Objects, Not Being Handled by Injured

Collapse of buildings, piles, scaffolds, etc.
From elevations.
Trees.
Objects tipping over (except vehicles).
Into excavations.
In mines and quarries, etc.

Handling of Objects

Heavy objects (loading, unloading, carrying, lifting, rolling or piling).
Hand trucks, carts and wheelbarrows.
Hand tools (including flying nails, chips or particles set in motion by tool).
Animals
Miscellaneous causes.

The Use of Accident Statistics

Accurate accident experience data is of great value in the prevention of accidents. For executives, simple and effective charts and tables may be prepared which will show at a glance the progress in safety work by departments, and where to concentrate efforts for accident prevention. For stimulating interest on the part of foremen and workmen, bulletins and charts may be prepared showing the accident record of each department compared to that of other departments and to their own record of the past month or year.

For the Executives

The plant executive will usually be interested in any of the charts which are prepared for bulletin board use. In addition, a data sheet may well be prepared each month which will give exact and more detailed information, and which may be filed in a permanent reference folder.

Graphic charts are also used by many companies to visualize the progress of safety work. The graphic method should not be overdone. A few simple lines indicating the trend of accident frequency are more effective than confusing lines.

For the Bulletin Board

Charts for the bulletin board should be easily intelligible. It is best to cover only one idea on a chart; i. e., one chart to show number of lost time accidents, another to show days lost, and another to show causes of accidents. To maintain continuous interest, the frequency and severity rates should be calculated and displayed at the end of each month.

Vary the form of the chart from time to time. The records should always be computed on the same basis but should be presented in different ways. If a plant sticks to the same set of tables, the same old charts, from year to year, interest will die out. Each year a new method of presentation should be adopted.

Government Regulation of English Calorific Standards

(*Continued from page* 462.)

have resulted in conditions which had an important influence in bringing about the investigation by the Fuel Research Board and eventually the advent of the practice of charging for gas on the basis of heat units delivered. The second—reduction in the use of oil—stimulated developments and changes in manufacturing practice, with reductions in calorific values which have remained to the present day.

In Dec., 1918, the war having come to an end, the Board of Trade, upon the advice of the Coal Comptroller, advised local authorities to take no action provided calorific power of gas did not fall below 450 B.t.u. and the proportion of inert constituents was not excessive. This order was later renewed, and finally, during the serious railway strike in the latter part of 1919, it was made a violation of the defense of the realm act to supply gas of over 425 B.t.u. Subsequent requests and orders of the Board of Trade since that time and particularly during the coal miners' strikes have received considerable publicity in the technical press.

Looking for a minute at the actual heating values carried at different times, we find that in 1907 the

London metropolitan companies probably supplied gas of about 585 B.t.u. but scattered tests in other undertakings show that many were furnishing 600 B.t.u. or over. By 1913, the average calorific value of undertakings reporting in Field's Analysis was about 555 B.t.u. By the end of the war, 485 to 500 B.t.u. was probably the average for the larger undertakings, though many failed to report and accurate data for this period are not available.

Particularly during the strike periods many undertakings appear at one time or another to have gone down to about 430 B.t.u. but most of them seem to have experienced serious trouble. They were flooded with complaints of consumers, both industrial and domestic; house piping frequently proved inadequate; naphthalene troubles became serious, and especially when no oil was used for carbureting water gas or when the coal gas was thoroughly scrubbed, dry meter diaphragms deteriorated rapidly. Most undertakings, therefore, found it impracticable to maintain heating values below 450 to 460 B.t.u. and hence to obey all of the orders of the Board of Trade. These experiences with very low heating values have had much to do with limiting most of the declared calorific values to 450 B.t.u. or over.

So far as consumers' complaints were concerned, those with whom I discussed the subject seemed to feel that appliances could have been adjusted to give satisfaction with these low heating values had there been time. In fact, in places where special conditions have made such values desirable, I saw gas of 400 to 425 B.t.u. being satisfactorily burned in domestic appliances.

Fuel Research and Investigation

Meanwhile, in 1917 the serious coal situation and the necessity for conservation led to the formation of the British Fuel Research Board, under the able leadership of Sir George Beilby. A few months later it was asked by the Board of Trade and other departments concerned to advise as to—

"What is the most suitable composition and quality of gas and the minimum pressure at which it should be generally supplied, having regard to the desirability of economy in the use of coal, the adequate recovery of by-products, and the purpose for which gas is now used?"

In January, 1919, the Fuel Research Board rendered its report. Briefly, it concluded that no fixed standard of composition or calorific value should be prescribed. It recommended that the consumer be charged on the basis of actual potential heat delivered to him; that inert constituents be limited to 12 per cent, and that each gas undertaking itself "declare the calorific value of the gas it intends to deliver and undertake to adjust the consumers' appliances . . . so that the gas delivered can be burned in these appliances with safety and efficiency."

Two important considerations seem to have influenced the Fuel Research Board in reaching its decision: First, war-time service conditions, especially those caused by "stretching the gas," were justly unpopular, and it was feared that if a calorific standard sufficiently low to permit full development of the gas industry had been recommended it would have been attacked, and the result would probably have been a compromise satisfactory to no one. Second, by charging for gas on the heat unit basis and allowing the undertaking to choose its own standard, this danger was avoided. At the same time, it was believed that this method of charging would discourage overexhausting of retorts and excessive inerts, and encourage the furnishing of the most economical fuel to the consumer.

The report of the Fuel Research Board received very great attention throughout Great Britain, and after considerable negotiation most of its main recommendations, together with provisions for financial relief of the undertakings and prescription of the method of testing the gas, etc., were incorporated into a bill which, upon passage, became the well-known gas regulation act of 1920.

Gas Regulation Act of 1920

Its more important provisions are as follows:

1. Adoption of "Therm."—The Board of Trade may, upon application of the undertaking, repeal any illuminating or calorific standard and substitute a method of charging for gas upon the number of heat units actually delivered to the consumers. In order to facilitate this a new unit called the "therm" was adopted, this being equal to 100,000 B.t.u.

2. Financial Relief.—The Board of Trade shall fix the maximum or standard price per therm, making full allowance for increases in costs since the beginning of the war. In effect, this is intended to put the undertakings back on a pre-war basis of dividends. The financial relief thus afforded is a most important factor in the present English situation.

3. Calorific Standard.—After the standard or maximum price has been fixed by the board, the undertaking is required to declare the calorific value of the gas which it intends to supply; and this declared value, not that actually maintained, is used as the basis for computing the consumers' bills. Penalties are provided for failure to maintain the declared calorific value during any quarter, or for deficiency of more than 5 per cent for more than two hours' time.

It is important to note that the undertaking *alone* is given power to fix its calorific standard. In one case of which I have been advised a consumers' association objected to the declaration, but the authorities took the position that it was a matter beyond their jurisdiction, their only duty being to see that consumers' appliances were adjusted.

4. Coming Under Act.—The Board of Trade may require any or all undertakings to come under the provisions of the gas regulation act within two years. Beyond this stipulation an undertaking may apply or not, as it sees fit.

5. Gas Referees.—In effect, the authority of the gas referees is extended over the testing throughout Great Britain.

6. Calorimeters.—Installations of recording calorimeters are required, but this provision has been temporarily set aside by the gas referees pending the development of more satisfactory instruments of this type.

The South Metropolitan Company, the first undertaking to inaugurate the system of charging for gas on the heat-unit basis, did so on Oct. 1, 1920, under a special act applicable to itself only. The first orders under the gas regulation act were made in March of this year, and such undertakings as have thus far come under it have barely begun to charge on the therm basis. The whole situation is unsettled and

transitional, and it is too soon even to predict whether or not the new method of charging will prove successful, nor can we tell what changes if any may prove necessary to make the operation of the act otherwise satisfactory.

On matters of financial relief and freedom of the undertakings to fix their own calorific standards, I found almost unanimous sentiment favorable to the act. On the desirability of the new method of charging, however, I found wide differences of opinion. In fact, I firmly believe that the financial relief afforded by the gas regulation act is the main attraction which it has for a very large majority of gas companies in England.

Some, however, under the leadership of the Gas Light & Coke Company and the South Metropolitan Company, are strong advocates of the new method. They take the position that gas is a form of potential heat energy and should, therefore, be sold on an energy; i. e., heat unit basis. They believe that it will furnish a good selling point in meeting the bitter competition with electricity, since electric companies have claimed an advantage in the fact that they are charging only for actual energy delivered. Also they believe it will discourage "stretching the gas," and especially under the sliding scale encourage the delivering of the most economical quality.

I found others, however, who believe that the same results could be obtained equally well without discarding the cubic foot as the unit upon which the price is based. Especially, the municipal corporations which apparently received more adequate financial relief than companies under the temporary increase of charges act of 1918, quite generally seem opposed to the therm method of charging, (1) on the ground (quite generally admitted by all) that serious public misunderstanding of the therm basis of charging is inevitable, and (2) because of higher accounting costs. In fact, the manager of one municipal undertaking claimed that accounting costs would be increased as much as 10 per cent.

Of the five large municipal corporations which I visited, the managers of two were strongly opposed to the act, a third was neutral, and a fourth expressed no opinion. The position of a fifth is indicated by the fact that the corporation promoted and, I understand, has recently had passed a bill with a fixed standard of 450 B.t.u. and with no provision for charging by the therm.

In a recently compiled list of ninety-five undertakings which have received orders under the gas regulation act, there appears only about three municipal departments.

Calorific Standards and the Development of the Industry

While the therm method of charging is in its infancy and no definite conclusion as to its success can yet be stated, the calorific standards now being declared under the act are the result of actual experience. Economic conditions and the necessity for conservation during the war, largely determined the heating values maintained, at least by the larger undertakings. So far as this matter is concerned, economic conditions to-day are not greatly different, and under the provisions of the gas regulation act, economic conditions with such practical limitations as actual experience has shown to exist, quite naturally are determining the values which are being declared. These figures range from 400 to 550 B.t.u. with the vast majority between 450 and 480 B.t.u.

The present-day standards are closely linked with the development of gas manufacturing conditions since the beginning of the war. The necessity for coal conservation and for making the greatest quantity of gas from existing equipment led to steaming vertical and in some of the smaller plants horizontal retorts, and also to a somewhat more extensive use of water gas carbureted with only very limited quantities of oil. Several single-stage complete gasification processes were developed, and have found rather wide application in the smaller plants.

The manufacture of blue or lightly carbureted water gas is already fairly well understood, but nevertheless has been the subject of an investigation by the Institution of Gas Engineers. Moderate steaming of vertical retorts has been shown to be desirable under English conditions by the investigations both of the Fuel Research Board and of the Institute of Gas Engineers. With respect to complete gasification processes, it is a little early to say just what will be their economy, limitation of application, and ultimate development. The details of the situation however, are of secondary importance, and the significant fact is that during the last few years, economy and conservation have not only been permitted, but insisted upon by the Government, and during this time developments have taken place which, I believe, would have been exceedingly difficult under fixed and inflexible standards such as are generally in force in the United States.

Under the freedom now available, we may expect still further development of plants and processes to meet both local and general conditions. In London, for example, several installations of horizontal retorts are at present being constructed. Local conditions and the character of the coal generally used there seems to have made this type of carbonizing equipment desirable. In Glasgow, a single installation of vertical retorts with a total daily capacity of 18,000,000 cu. ft. of gas is now nearing completion. Local Scotch coals produce a poor coke, and vertical retorts steamed rather hard should give particularly economical results. In fact, while the Scotch are cautious and will make reductions slowly, I fully expect that in the future they will reach heating values of 400 to 450 B.t.u. with substantial advantage to all concerned. Elsewhere, horizontal or vertical retorts, carbureted water gas apparatus and, in the smaller plants, complete gasification apparatus is being installed. Each situation is aiming to work and to develop its plant so as to make the most economical gas under its own local conditions. Few are and none need be hindered by uneconomical restrictions.

Reasons for Calorific Values Adopted

Under these conditions, the following are some of the considerations which have led to a choice of calorific standard.

Straight coal gas made without steaming probably runs in England from 510 to 560 B.t.u. The market is insufficient in most places to absorb all of the coke produced. Thus, most undertakings have found it economical to make some proportion of water gas, either by steaming or in water gas sets. On the other

hand, experience has shown that when a very dry gas is sent out naphthalene and dry meter troubles have become serious and this has been particularly true when a heating value less than 450 B.t.u. has been carried. Furthermore, street mains, service and house piping and meter capacities, in some cases, have tended to become inadequate, particularly when the heating value has been reduced below this figure. As a result, very many undertakings have settled down to a practice of steaming their retorts by not over 20 per cent of the throughput of coal and carbureting their water gas with not less than three-fourths nor more than one and a half English gallons of oil. In such cases, the resultant calorific value of the mixed gas has generally been from 450 to about 490 B.t.u. During the strike periods, it was found that in addition to meter and naphthalene troubles extensive readjustment of appliances would generally be necessary were the heating value to go below this. Thus a combination of economic conditions and practical limitations have served to fix the present English standards.

In special cases such as that of the South Metropolitan Company, which has found it practicable to dispose of all of its coke at good prices, straight coal gas is still manufactured and the calorific value maintained is therefore high. On the other hand, Plymouth affords an example of a place where the coke market is particularly poor. For years this company has manufactured about 40 per cent of carbureted water gas and under such conditions a standard of 425 B.t.u. has become economical and is the figure which has been declared. In still other places where complete gasification plants are in operation, calorific values of 400 B.t.u. have been chosen, while in certain localities, I understand that even lower values are being maintained. All of this clearly shows that local conditions have determined the calorific values chosen and amply confirms the judgment of the Fuel Research Board which, in reporting its conclusions, said: "We do not consider that it would be to the ultimate advantage of any of the interests concerned that any one fixed standard of composition and calorific value should be prescribed."

Effect upon Consumers

No evidence was discovered which would indicate that present English standards are in any way unsatisfactory from the consumers' standpoint provided adequate pressure is maintained. In fact, with the exception of the representative of the London County council, who claimed no experience with values below 485 B.t.u., it seems to be generally accepted by officials of both private and municipal undertakings, public authorities, representatives of consumers' associations, and, in fact, by all with whom the matter was discussed, that 450 B.t.u. gas can be used with entire satisfaction with properly designed and constructed appliances. One consumers' association complained that certain old-type industrial installations gave trouble below about 500 B.t.u., but otherwise it was generally agreed that except in rare cases 450 B.t.u. gas can be used in present apparatus with only minor adjustments. While difficulty seems to have been experienced by many when they went below 450 B.t.u., yet most seem to feel that even down to 400 B.t.u. existing appliances can be adjusted to give good satisfaction. In fact, I saw gas of that calorific value in successful use. Below 400 B.t.u. I am not convinced that satisfaction can be obtained without radical alteration of appliance burners.

In spite of bitter competition from electricity, the English gas industry has largely retained both its domestic and street incandescent lighting. How much the low heating value gas had to do with this I cannot say, but during my two months' stay in England I did not see one black mantle nor have I ever seen more excellent street lighting. I was told that with the lower heating value gas blackened ceilings have been unusual. In one city I learned that the decrease in calorific value had resulted in an increase of industrial business, it being claimed that the leaner gas was more suitable for the desired purposes. In fact, I found none who advocated heating values over 500 B.t.u. except on the ground of production and distribution economy.

Diligent search failed to reveal any definite data showing the effect of reduction in calorific value upon the consumers' use of gas. Opinion on this subject varied greatly, though a large majority appear to believe that in actual practice with low calorific values, say, 450 B.t.u., the consumer is more apt to obtain better efficiency than with a richer gas. All agree, however, that substantial increase in consumption would take place.

English conditions in this respect are radically different from our own. The experience of English gas engineers during the time they have been studying this subject has not extended to gas much above 550 B.t.u. and has been more generally confined to the limits of 425 to 525 B.t.u. In this range a fairly dry and stable gas is produced, especially with English coals which, as already mentioned, yield a rather low percentage of illuminants and hence of condensible hydrocarbons.

This whole question of effect of reduction in calorific value on consumption is still unsettled in England. In a general way I believe opinion has been largely based upon the laboratory tests of the Fuel Research Board and of the Institution of Engineers, which indicated that efficiency is independent of calorific value per cubic foot. In the board's report, however, it is stated that "the experimental proof of this parity (of heat units) is still incomplete," and I believe that in the opinion of the board this statement still applies.

Conclusions

This report will have failed entirely in its purpose if it has not made clear that a vast difference exists between our conditions and those in England. How far it is practicable to make use of English experience and incorporate the methods of that country into our own practice is a question requiring mature consideration. Methods of regulation and rate making, public relations questions and manufacturing conditions make the situations in many respects hardly comparable.

England started with calorific standards generally later than we did. War conditions hastened their development. Finally a combination of local circumstances led to the passage of the gas regulation act.

Whether or not the "therm" method of charging under this act will prove successful in England is still an unsettled question. That it is better adapted to English conditions than to our own there can be but little

doubt. In England there is no public relations question as we have it, and yet misunderstanding and dissatisfaction appear to have been usual among domestic consumers where the "therm" method has been inaugurated. In this country I can hardly believe that it would be received by the public any more favorably than zone trolley fares.

Furthermore, in England there is a distinct tendency to leave utilities alone. The maximum or standard price is fixed, and if from time to time the undertakings desire to change their calorific value they may do so under the "therm" basis without disarranging their maximum price or sliding scale provisions. If they make savings thereby the disposal of them is already provided for under the provisions of their acts. In this country, however, rates are based on costs of operation, depreciation and contingencies, plus a fair return on the value of the property. It is hard to believe that with us any change in calorific value could be made without a public hearing at which the authorities would probably be requested to fix a new rate in accordance with the above principles. There seems no great advantage in having such a rate expressed in therms rather than cubic feet. If other principles are to govern the price, as in England, then our rate-making system must be altered; but the advisability of doing this is a question outside the scope of this report.

These comments are not in any way intended to condemn the "therm" method of charging, but merely to indicate the radical differences between English conditions and our own and the necessity of caution in adopting English methods without thorough investigation.

Likewise, the fact that English undertakings have generally adopted calorific standards of 450 to 480 B.t.u. is not necessarily a reason that we should do so. Economic conditions have determined English standards, and, with due regard to the satisfaction to the consumer, economic conditions should determine our own standards.

This much we can say definitely, however: 450 B.t.u. and even lower calorific values are being satisfactorily and efficiently used in England to-day in appliances which appear less easily adjustable than our own. General opinion is that the service has improved.

Freedom from restrictions as to calorific value has led to the maintenance of the most economical figure for each particular undertaking, taking into consideration not only general prices and conditions but also the character and size of the plant, the extent and capacity of the distribution system, the adequacy of metering equipment and house piping, and finally the purposes for which in general the gas is used. It has led to development of new methods and processes, the benefits from which must ultimately accrue to the consumer.

That it is to the interests of neither the consumer nor the utilities to require compliance with uneconomic and burdensome restrictions was recognized by the Fuel Research Board in its well-known report. It was likewise recognized in our own calorific standards committee report of last year. It is merely the reiteration of the principle that calorific standards should be based in every case upon local economic conditions. The experience of England has confirmed the soundness of this principle in actual practice, and it could but be to our advantage to follow her lead in this respect.

I can think of nothing which would be at the same time more stimulating to the progress of the gas industry, and ultimately more beneficial to its consumers, than the removal of all heating value restrictions, thus permitting each company to choose the calorific standard best suited to its own particular conditions. Rates should then be fixed in accordance with our recognized principles of regulation. Under such circumstances we might well look forward to an unhampered growth and development at least equal to that which is to-day taking place in England.

The Discovery of Gas and the Result

In presenting the present article, the writer has borrowed from every source at his command, in so far as was needed. It is hoped that by so doing some interesting statements relative to gas are given.

Credit has been given to Van Helmont, a Belgium chemist, as the discoverer of gas, early in the seventeenth century. Van Helmont christened his newly found toy as "geist," meaning ghost in German. Not a bad selection when we contemplate the nature of gas.

For a long time after Van's discovery people looked upon "the ghost" as an unhealthy thing, possibly believing that it was a part of the Grim Reaper's lotions that produced the sleep of death.

The less superstitious saw the great benefit to be derived from the use of the new fire and light and laughed at the timid so hard and so long that many were converted and following the progress of Van Helmont's discovery we find, by using some figures published and credited to a research committee of the American Gas Association:

"Gas was first exhibited in the United States in 1806, it being shown as a 'freak' in Peale's Dime Museum, in Baltimore. That city had the first gas company in America, it being established in 1816, and its boast is that its plant has operated without once failing the city ever since.

"Other cities were quick to follow—New York in 1823, Boston 1828, Louisville 1832, New Orleans 1833, Philadelphia 1836, Cincinnati 1840, St. Louis 1846 and Chicago 1850.

"For many years it was difficult to convince the people that gas pipes would not get hot and set fire to the houses, that gas would not burn until mixed with air at the burner, and so strong was the prejudice that even as late as 1833 several hundred prominent citizens of Philadelphia addressed a petition to the municipal authorities condemning a plan for establishing a gas lighting system.

"That witches, fetishes and other hog-goblins soon lost caste with our far-seeing Americans, look at the gas industry to-day. Four billion dollars has been invested in plants and equipment producing the most economical fuel, and more than 4,000 communities, containing nearly half of the population, are daily served with light and heat.

"Our gas mains are equal in mileage to nearly three times around the earth. Gas is used in more than seven million cooking stoves and appliances, one and one-half million water heaters and one million gas heaters.

"A conservative statement is, that gas has become so necessary to industry that thousands of manufacturing plants would close if gas service was suspended."

You can't keep a good one down and that's why gas progressed over all opposition.

Are you a good one? Prove it by your sales.—E. S.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company	Issue	Maturity		Nov. 17, 1921 Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May	1, 1925	96	97
Brooklyn Union Gas Co.	First Consol. 5s	May	1, 1945	88	90
Columbia Gas & Elec. Co.	First 5s	May	1, 1945	87	89
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec.	1, 1945	101½	103
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Feb.	14, 1935	78	79
Consol. Gas Co. of New York	Sec. Conv. 7s	Feb.	1, 1925	103	103½
Consol. Gas Co. of New York	One Year Sec. 8s	Dec.	1, 1921	100	100¼
New Amsterdam Gas Co.	First Consol. 5s	Jan.	1, 1948	74	76
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	May	1, 1949	80	81
Detroit City Gas Co.	Gold 5s	Jan.	1, 1923	95	97
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan.	1, 1928	98	101
Hudson County Gas Co.	First 5s	Nov.	1, 1949	77	80
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr.	1, 1943	89	91
Louisville Gas & Elec. Co.	First & Ref. 7s	June	1, 1923	97½	99½
Michigan Light Co.	First & Ref. 5s	Mar.	1, 1946	75	79
Milwaukee Gas Light Co.	First 4s	May	1, 1927	83	85
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan.	1, 1942	87¼	88
Pacific Gas & Elec. Co.	Col. Tr. Conv. 7s	May	1, 1925	100	101
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec.	1, 1940	106½	107
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov.	1, 1937	91	93
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept.	1, 1947	82	83
Chicago Gas Lt. & Coke Co.	First 5s	July	1, 1937	86	87
Portland Gas & Coke Co.	First & Ref. 5s	Jan.	1, 1940	83	85
Seattle Lighting Co.	Refunding 5s	Oct.	1, 1949	71	73
Southern California Gas Co.	First 6s	Nov.	1, 1950	89	92
United Gas Improvement Co.	Two Year 8s	Feb.	1, 1923	100	101
Utica Gas & Electric Co.	Ref. & Ext. 5s	July	1, 1957	81	83
Washington Gas Light Co.	General 5s	Nov.	1, 1960	83	84
Western States Gas & Elec. Co. of California	First & Ref. 5s	June	1, 1941	80	83

$25,000,000 Merger by Steel Interests

San Francisco, Cal.—Announcement has been made here closing a deal between Utah and California capitalists which involves a $25,000,000 iron, coal and steel merger, the primary aim of which, it was said, will be to make the West independent of Eastern steel and iron.

The details, as given out by L. F. Rains, president of the Carbon Fuel Company, of Salt Lake City, call for the single industrial management of the coal, coke and iron industries and deposits of the Utah mineral region and the providing of raw materials from that section for finished steel products.

At the head of the merger is Wigginton E. Creed, president of the Pacific Gas & Electric Company and president of the Columbia Steel Company of Pittsburgh, Cal.

Mr. Rains declared all details of the merger, including contracts for several phases of the work, have been signed.

Approves Bond Issue

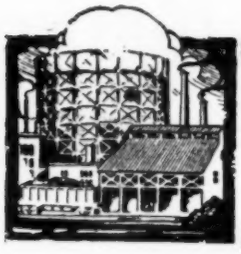
Boston, Mass.—The Department of Public Utilities has approved the petition of the Amesbury & Salisbury Gas Company that it be permitted to issue $102,700 of original capital stock, 1,027 shares of $100 par value, for all the property formerly owned by Amesbury & Salisbury Gas Company and sold to John Cashman at a receiver's sale.

Public Utilities Not Expected to Suffer Losses, Says Rate Commission

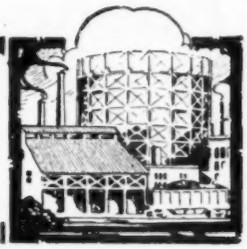
Milwaukee, Wis.—Public utilities should not be expected to forego their profits and take losses like private corporations during a period of business depression, says the Indiana Public Utilities Commission, in a decision received at the office of the Wisconsin Electrical Association here.

"It would be all right to make utilities bear part of their burden of business depression," says the commission decision, "if during hard times a private utility were permitted to close its doors and suspend operation until business conditions become promising. It might be still more logical if a utility were permitted during boom times to enjoy large earnings and pay out its profits in dividends. Public utilities furnished service throughout the war period at less than the cost of service, while unregulated private corporations were cheerfully making unheard-of profits.

"Regardless of the state of business generally, public utilities must continue to operate at maximum speed. They must constantly extend their lines, add to and improve their equipment in order to keep up with the growth of communities and developments of the art. The public demands these things. Their cost is great and will probably never again go to the pre-war level. There is but one source of revenue and credit the public utilities have and that is from subscribers and patrons who pay the rates."



NEWS OF THE GAS INDUSTRY



City Owned Utilities Exempt

Washington, D. C.—The Supreme Court has upheld the contention of the city of Springfield, Ill., that public utilities operated by municipalities can be exempted from jurisdiction of State laws regulating privately owned public utility corporations.

The court rendered its decision on an appeal brought by the Springfield Gas & Electric Company, contending that such a law in the State of Illinois was unconstitutional in that it relieved the city of Springfield and other municipalities owning and operating public utilities from the jurisdiction of the State regulatory commission. The city of Springfield also won in the Illinois State courts.

Will Retain Contract with the Tampa Gas Company

Tampa, Fla. — Tampa voters have decided to retain the street lighting contract with the Tampa Gas Company which that concern has sought to have canceled. The vote was perhaps the lightest in history comparatively, there being 800 votes cast with approximately 11,150 qualified electors. The gas company has sought cancellation of its contract on the grounds that the city could save money by contracting for electric lighting throughout and that the gas company itself if relieved of the contract would probably be able to reduce rates to the general consumers shortly. The vote stood 245 and 497 against canceling the contract.

Gas Rate Case Due in U. S. Supreme Court

Washington, D. C.—Gas rate cases, which may involve the return of $20,000,000 to the consumers in New York City, will come up for argument this week before the Supreme Court of the United States, according to information received from the corporation counsel's office. The cases are appeals from the decision of Judge Learned Hand of the United States district court, last March, as a result of which the gas companies increased rates from 80 cents to $1.50 per thousand cubic feet. The difference, however, was impounded under Judge Hand's decision.

John P. O'Brien, corporation counsel, and James A. Donnelly, assistant corporation counsel, and W. W. Chambers, deputy attorney general, will make the argument for the city and State.

Addresses Engineers

Daniel Roesch, associate professor of gas engineering, Armour Institute of Technology, addressed the Midwest Section, Society of Automatic Engineers, at a meeting held in the rooms of the Western Society of Engineers, Chicago, on Oct. 31, 1921. His subject related to fuel utilization of the motor car and showed in detail all heat and power losses which occur in the engine and chassis.

About 100 members of the society were present. The importance of the points brought out in Mr. Roesch's presentation of the subject caused much valuable discussion at the close of his address. Wooden forms with surfaces designed to visualize three variables and representing the gasoline consumption at all speeds and loads for automobile engines were shown. These were developed in the laboratories of the Armour Institute of Technology. Their presentation created a great deal of interest.

Opens New Office

The United States Cast Iron Pipe & Foundry Company, of Burlington, N. J., has opened a new office at 811 Dixie Terminal Building, Cincinnati, Ohio. P. T. Laws, assistant works manager, will make this point his headquarters. Sales from this office will be in charge of Harold G. Henderson.

Blue Gas Sets at Seaboard, N. J.

Three eleven-foot blue water gas sets of an interesting design are being erected in connection with the coke-oven plant of the Seaboard By-Products Coke Company.

Following each generator, there is a combustion chamber of the same size as the carbureter shell of an eleven-foot carubreted water gas set. Should it ever be necessary in the future to furnish gas of higher B.t.u. than plain blue gas, arrangements can readily be made to enrich the gas. After each combustion chamber there is installed a waste heat boiler, which uses both the blast gases and the blue gas for making steam. After the blue gas leaves the waste heat boiler, it is received in a large seal and subjected to a heavy spray of circulating water. All the valves on these large sets will be operated by hydraulic cylinders, controlled in each case by a Western automatic control. These machines are now being installed by the Western Gas Construction Company.

Utica Gas Rates to Stay

Albany, N. Y.—The average rate of $1.41 per thousand cubic feet of gas now charged consumers in the Utica district by the Utica Gas & Electric Company is a "fair and reasonable" charge, the Public Service Commission has decided.

The petition of the company for an increased rate and the application of the city for a reduction in the present rates were denied.

Gas Company Earns $99,638 in Past Year

Boston, Mass.—According to the statement of the Stone Webster Company, Boston, the surplus after charges were deducted in the business of the Haverhill Gas Company, for September were $19,113. The net earnings for twelve months to Sept. 30 amounted to $99,638. The surplus after charges were deducted for this period was $89,424.

Installs Two New Gas Pushers

Atlanta, Ga.—Two new three-phase, centrifugal De Laval gas pushers have been installed at the plant of the Atlanta Gas Light Company, to increase the gas pressure and improve the service in Atlanta and outlying districts.

According to R. C. Congdon, manager of the gas company, Atlanta is now getting the best gas service the city has ever had.

Another improvement the gas company is just completing is the 4,115 ft. of new ten-inch gas main along North Boulevard from Amsterdam Avenue to Piedmont Avenue, and along Piedmont Avenue to and across the Southern Railway bridge

This work was started Oct. 3, but has been retarded somewhat on account of delay in receiving some of the material.

The new extension lies entirely in the territory recently annexed to the city, a portion of it extending beyond the city limits, and it is expected to improve the service greatly in the Ansley Park section.

Daily graphs made of gas consumption in this neighborhood show the "peak load" to be between 7.15 and 1.45 in the mornings, which is the hour, according to gas office records, that Ansley Park residents prepare breakfast. By means of a governor station located at Virginia Avenue and North Boulevard, the pressure can be regulated to take care of the requirements of that district.

The cost of this extension will approximate $11,512, and it is expected this large main will provide feeder service for any future extensions in this section for several years.

Rejects Meter Charges

Boston, Mass.—The last Legislature passed a measure, under which gas and electric companies might make a meter charge, providing they had the approval of the Department of Public Utilities. During the months since the act was passed, a number of such companies have sought the approval of the department. Many of these petitions have not been acted upon, but the department has declined its approval to the Spencer Gas Company, and followed the same course in a decision on the petition of the Worcester County Gas Company.

The Worcester County Gas Company asked approval of a meter rate of $1 per month in addition to a rate of $2 per thousand cubic feet of gas consumed. In rejecting the petition, the department said that although the proposed rate would be cheaper for some customers, it would only affect about one-third of the customers. The law, as it now stands, reads:

"Unless approval thereof is secured from the department, no charge shall be made by a corporation furnishing electricity for lighting purposes or gas for the use of a meter during any portion of twelve consecutive months, if the consumer during that time uses electricity to the value of $9, or gas to the value of $7, and whoever makes a charge therefor contrary to this section shall be punished by a fine not exceeding $100."

Rochester Gas Rate Reduced

Albany, N. Y.—The Public Utilities Commission of New York has ordered Rochester Gas & Electric Company to abolish the service charge for gas in Rochester, and fixed the price at $1.10 a thousand cubic feet. The old minimum rate of 50 cents was restored. This change in price will reduce revenue between $275,000 and $300,000 annually, and give Rochester the lowest rate for artificial gas of any city in the State.

Gas Managers Confer

Worcester, Mass.—On Tuesday evening, Nov. 1, managers and superintendents of gas companies operated by C. H. Tenney & Co. gathered in Worcester for a conference. The meeting was held under the auspices of the gas superintendents committee. H. A. Norton, of the Nathaniel Tufts Meters Works, read a very interesting paper which brought forth much discussion. Representatives of the following companies were present:

Peoples Gas Electric Company, Rockland Light & Power Company, Springfield Gas Light Company, Laconia Gas & Electric Company, Keene Gas & Electric Company, Bristol & Plainville Electric Company, Fitchburg Gas & Electric Company, Greenfield Gas Light Company, Suburban Gas & Electric Company, Malden & Melrose Gas Light Company, Worcester Gas Light Company, and C. H. Tenney & Co.

Formation of Rocky Mountain Committee on Public Utility Information

Permanent organization of the Rocky Mountain Committee on Public Utility Information has been completed.

The committee, whose field will cover the States of Wyoming, Colorado and New Mexico, was organized under the joint auspices of the Rocky Mountain division of the N. E. L. A., the Wyoming Utilities Association, the Colorado Electric Light, Power and Railway Association and the New Mexico Utilities Association. The presidents of these four organizations are to be *ex-officio* members of the committee.

The full membership of the committee and its officers are as follows: T. O. Kennedy, chairman of the committee, Denver Gas & Electric Light Company, Denver, Col.; V. L. Board, secretary and treasurer of the committee, Denver Gas & Electric Light Company, Denver, Col.; Frank Kivel, Denver Gas & Electric Light Company, Denver, Col.; Norman Read, the Colorado Power Company, Symes Building, Denver, Col.; W. C. Sterne, Summit County Power Company, Gas & Electric Building, Denver, Col.; Walter F. Brown, Mountain States Telephone & Telegraph Company, Denver, Col.; John J. Cooper, Mountain Electric Company, 1623 Glenarm, Denver, Col.; John F. Greenawalt, Mountain States Telephone & Telegraph Company, Denver, Col.; E. A. West, Denver Tramway Company, Tramway Building, Denver, Col.; E. A. Phinney, Jefferson County Power & Light Company, Golden, Col.; Fred Norcross, Home Gas & Electric Company, Greeley, Col.; Frank J. Dostal, Colorado Springs Light, Heat & Power Company, Colorado Springs, Col.; Chas. A. Semrad, Western Light & Power Company, Boulder, Col.; W. F. Raber, Arkansas Valley Railway, Light & Power Company, Pueblo, Col.; E. P. Bacon, Natrona Power Company, Casper, Wyo.; Arthur Prager, Albuquerque Gas & Electric Company, Albuquerque, N. M.; H. D. Randall, General Electric Company, Denver, Col.; L. M. Cargo, Westinghouse Electric & Manufacturing Company, Denver, Col.; A. C. Cornell, Western Electric Company, Denver, Col.; D. P. Strickland, Colorado Springs & Interurban Railway Company, Colorado Springs, Col.; J. A. Clay, Western Colorado Power Company, Durango, Col.; W. P. Southard, Trinidad Electric Trans-

mission Railway & Gas Company, Trinidad, Col.; E. J. Condon, Jr., Intermountain Railway, Light & Power Company, Colorado Springs, Col.; A. E. Bent, Tucumcari Light & Power Company, Tucumcari, N. M., Colorado Building, Denver, Col.; C. M. Einhart, Roswell Gas & Electric Company, Roswell, N. M.; J. H. MacMillan, Santa Fe Water & Light Company, Santa Fe, N. M.; E. A. Bradner, Las Vegas Light & Power Company, Las Vegas, N. M.; F. H. Roberts, Popo Agie Light & Power Company, Riverton, Wyo., 1900 Hudson, Denver, Col.; J. J. Withrow, Sheridan County Electric Company, Sheridan, Wyo.; R. R. Beddow, Intermountain Railway Light & Power Company, Laramie, Wyo.

This committee follows the formation of similar committees in the States of Illinois, Indiana, Ohio, Kentucky, Missouri, Arkansas, Nebraska and Oklahoma, and has the same object as these committees, viz., to supply the public with accurate information in regard to public utility business. Information in regard to the electric light, gas, street railway and telephone business will be covered by the committee. Communications should be addressed, Rocky Mountain Committee on Public Utility Information, 342 Gas & Electric Building, Denver, Col.

Gas Company to Demonstrate by Giving Dinner

Warren, Pa. — The Warren-Chautauqua Gas Company will give a unique demonstration on gas conservation and will serve an elaborate dinner to upwards of 100 invited guests.

This dinner will be the culmination of the educational campaign the company has conducted for three months, in which it was sought to teach consumers to use gas more efficiently and consequently with less expense.

The cooking will be done on one old range that has been used for demonstration purposes and two new ranges, the burners of which will be in the proper position so that a pressure of only one-half ounce and short gas flames will be all sufficient for successful baking and roasting and boiling.

The gas consumption will be carefully determined by a committee and it is predicted by the gas company officials that the small amount of gas used will be a distinct surprise.

Contracts Awarded

The U. G. I. Contracting Company, of Philadelphia, is supplying a 6,000,000 cu. ft. capacity tar extractor to the Public Service Gas Company for installation in its Paterson, N. J., works.

The Lowell (Mass.) Gas Light Company is also purchasing a 4,500,000 cu. ft. capacity tar extractor from the same company.

Among other contracts closed last week by the Stacey Manufacturing Company, there was included a 750,000 cu. ft. capacity three-life steel-tank gas holder for Amsterdam, N. Y., and a 1,000,000 gal. capacity steel water standpipe for the city of New Braunfels, Texas.

Orders New Equipment

The Conewago Gas Company has awarded contract to the U. G. I. Contracting Company, Philadelphia, for installation of additional carbureted water gas equipment at its works in Hanover, Pa. A five-foot U. G. I. cone top set will be installed together with a tar extractor and other equipment

Faithful Employee Is Retired

Warren, Pa.—John Regner, who for many years has been connected with the Pennsylvania Gas Company, has entered upon the retired list and will receive a pension for faithful service so long as he lives. Mr. Regner is perhaps the oldest man connected with the gas business in Warren and previous to entering the service of the Pennsylvania was employed at the plant of the Manufacturers Gas Company, who manufactured artificial gas and piped it through the streets of Warren in wooden pipes. Some of these old conduits are exhumed to this day when excavations are made for water, gas or sewer lines.

For the past few years, Mr. Regner has had charge of the company's interests at Wilcox.

Hoffman Heater Company Opens New Office

Development of the Texas field has progressed for the Hoffman Heater Company, with such regularity and consistency that it has been deemed advisable by the company to open, at San Antonio, a branch office.

This office will be an offshoot of the main office at Dallas, and will be in charge of A. H. Freshwater, and quarters for display and storage have been secured at 403 Main Avenue, a prominent location.

Mr. Freshwater is well known in Western water heater circles, and is a competent water heater man.

Present building conditions at San Antonio preclude a good showing for this branch.

Facts About Gas

Twenty-five per cent of the gas manufactured in the United States to-day is used in industry and the percentage is growing steadily.

The first public street lighting with gas took place in Pall Mall in London on Jan. 28, 1807.

Gas for illuminating purposes was first manufactured in the United States by David Melville, of Newport, R. I., who lighted his home and the street in front with gas which he manufactured on the premises in 1806.

Industrial concerns have already found upwards of 2,000 uses for gas in various manufacturing processes.

Consumption of gas in the United States has doubled in the last ten years. Last year 319,887,813,000 cu. ft. were used, compared with 149,430,549,000 cu. ft. in 1910.

Hotels, clubs, restaurants and institutions in the United States using gas for all cooking purposes on Jan. 1, 1921, numbered 71,490, while those using it in part number 13,776.

American housewives use 1,500,000 gas water heaters in their homes.

More than a million homes in the United States have gas heaters.

Gas company executives estimate one billion dollars must be spent during the next three years, building extensions and betterments in the gas industry, in order to meet the growing demand for service.

William Murdock was the first man to use gas for illuminating purposes. He lighted his home at Redruth in Cornwall, England, with gas which he manufactured in 1792.

Gas experts say that within a few years gas will take the place of coal and other fuels for heating homes, hotels and apartment and office buildings and that then the dawn of the smokeless and sootless city will come.

Dividend Notice

San Francisco, Cal.—The regular dividend, for three months ending Oct. 31, 1921, of $1.50 per share, upon the full-paid first preferred capital stock of the Pacific G. & E. Company was paid Nov. 15, 1921.